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WOMEN AS POLICY MAKERS: EVIDENCE FROM AN INDIA-WIDE RANDOMIZED POLICY EXPERIMENT

Raghabendra Chattopadhyay, Indian Institute of Management, Calcutta
Esther Duflo, MIT and NBER

Working Paper 01-35
October 2001

Room E52-251
50 Memorial Drive
Cambridge, MA 02142

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Women as Policy Makers:

Evidence from a India-Wide Randomized Policy Experiment

Raghabendra Chattopadhyay*and Esther Duflo†

October 2001‡

Abstract

This paper uses political reservations for women in India to study the impact of women's leadership on policy decisions. In 1998, one third of all leadership positions of Village Councils in West Bengal were randomly selected to be reserved for a woman: in these councils only women could be elected to the position of head. Village Councils are responsible for the provision of many local public goods in rural areas. Using a data set we collected on 165 Village Councils, we compare the type of public goods provided in reserved and unreserved Villages Councils. We show that women invest more in infrastructure that is directly relevant to the needs of rural women (water, fuel, and roads), while men invest more in education. Women are more likely to participate in the policy-making process if the leader of their village council is a woman. (*JEL* H4, H7, I18, J16, O1; *Keywords* Gender, Decentralization, Affirmative action, Political Economy)

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1 Introduction

Worldwide, women are under-represented in all political positions. In June 2000, women represented 13.8% of all parliament members, up from 9% in 1987. Compared to economic opportunities, education, and legal rights, political representation is the area in which the gap between men and women has narrowed the least between 1995 and 2000 (Norris and Inglehart 2000).

Increasing the political representation of women is often thought to be a "win-win" proposition, increasing equity of efficiency: equity because women and men have different political agendas, and increased representation would ensure a better representation of women's needs; efficiency, because women are supposed to be better politicians (less likely to be corrupt, more altruistic), and because the political agendas of women are thought to lead to investment in child health and education, which have positive long term consequences on growth. Alleviating deprivation and inequality in the political realm can thus have far reaching consequences, not only for women, but for everyone (a point made most forcefully by Amartya Sen in *Development as Freedom* (Sen 1999)). This position, articulated for example in the United Nations report, *The World's Women* (United-Nations (2000)), and in the World Bank's report, *Engendering Development* (World-Bank (2001)), shapes policies and debates around the world.

Because women's representation in the political sphere advances slowly, and does not seem to be greatly affected by economic development, political reservations for women are often proposed as a way to rapidly enhance women's ability to participate in policy making. Quotas for women in assemblies or on parties' candidate lists are in force in the legislation of over 30 countries (World-Bank (2001)), and in the internal rules of at least one party in 12 countries of the European Union (Norris (2001)).

Reservation policies clearly have a strong impact on women's representation.[1] This does not necessarily imply, however, that they have a impact on policy decisions. In standard "Downsian" political economy models, where candidates can commit to a specific policy, political decisions reflect the preferences of the electorate. In a Coasian world, even if the reservation policy increases women's bargaining power, policy decisions other than transfers to women should not

[1]See Jones (1998) for a study of the Argentinian case, and Norris (2001) for the impact of reservation in the Labour Party in the UK. Women's representation fell from 25% to 7% in Eastern Europe when gender quotas were eliminated during the transition from Communism (World-Bank (2001)).

be affected. The efficient outcome should be achieved, and women would then be compensated with direct transfers.

There is some evidence that the assumption behind these models are violated. In the U.S., Levitt (1996) shows that politicians' decisions are strongly influenced by personal ideology. Female legislators devote more energy to women-specific issues than men do, and are also more successful in passing legislation on women's issues when they propose it (Thomas (1991), Thomas and Welch (1991)). In India, Pande (1999) argues that reservation for minorities affects targeted transfers.

However, despite the importance of this issue for the design of institutions, very little is known about the causal effect of women's representation on policy decisions. The available evidence, based on cross-sectional comparison, is difficult to interpret, because the fact that women are better represented in a particular county or locality may reflect the political preferences of the group that elects them. The correlation between policy outcomes and women's participation then may not reflect the causal effect of women's participation.[2]

Furthermore, even if we knew more about the causal effect of women's representation, this knowledge would not necessarily extend to the effects of quotas, or other mechanisms to enforce greater participation of women in the political process. Ensuring women's representation through quotas may distort political competition and have direct effects. For example, it may lower the competency of the pool of eligible candidates, alter voter's preferences over political parties, and increase the number of politicians that are new in office.

This paper studies the policy consequences of mandated representation of women by taking advantage of a unique experiment implemented recently in India. Since 1998, one third of all positions of chief (Pradhan) of the West Bengal village councils (Gram Panchayat, henceforth GP) have been reserved for women: only women may be candidates for the position of Pradhan in a reserved GP. Furthermore, the reserved GP were selected randomly: GP were ranked by

[2]For example, Dollar, Fisman and Gatti (1999) find a negative correlation between representation of women in parliaments and corruption. Does this mean women are less corrupt, or that countries that are less corrupt are also more likely to elect women to parliament? Besley and Case (1997) show that worker compensation and child support enforcement policies are more likely to be introduced in states where there are more women in parliament, after controlling for state and year fixed effects. But they explicitly recognize that the fraction of women in parliament may be a proxy for women's involvement in politics, more generally.

their serial number, and every third GP was reserved for a woman. This has resulted in a dramatic increase in the number of women elected as Pradhan.[3] This policy was enacted five years after a constitutional amendment that gave substantial power to the village councils to define and implement local development projects, and maintain local infrastructure, using state funds. Thus, the GP Pradhan makes decisions about which public goods to provide, and where to provide them. We conducted a detailed survey of all investments in local public goods in all the GP of one district (Birbhum, in West Bengal), and we compare investments made in reserved and unreserved GP. Since GP were randomly selected to be reserved for women, differences in investment decisions can be confidently attributed to the policy of mandated representation of women.

The results suggest that reservation does indeed affect policy. Women participate more in the political process in GP that are reserved for women. In those GP, there are also significantly more investments in drinking water infrastructure, recycled fuel equipment, and road construction. By contrast, in unreserved GP, there are significantly more investments in education. Health workers are monitored more closely in reserved GP, and teachers are monitored less closely.

These results are interesting in their own right, because they show that the reservation policy did indeed modify policy making. We can in addition exploit specific features of the reservation legislation to investigate whether its effects can be attributed to the gender of the Pradhan, rather than to other consequences of reserving seats. We specifically investigate whether the results can be explained by the fact that women are inexperienced, that they may be perceived as less likely to be re-elected, and that they tend to come from a more disadvantaged background than men.

These results thus indicate that a politician's gender does influence policy decisions. More generally, they provide new evidence on the political process. In particular, they provide strong evidence, based on a randomized experiment, that the identity of a decision maker does influence policy decisions. This provides empirical support to political economy models that seek to enrich the Downsian model (Alesina (1988), Osborne and Slivinski (1996), Besley and Coate (1997)).

The remainder of this paper proceeds as follows. Section 2 describes the political context, the policy, and the data set. Section 3 reviews the literature and discusses how political reservations

[3] In West Bengal, only 6% of Pradhan were women after the 1993 election.

for women could affect policy outcomes. Section 4 discusses these intervening mechanisms: it compares the characteristics of male and female Pradhan, and shows that the reservation policy did affect women's political participation. Section 5 presents the central results of the paper, the difference in public goods provisions in reserved and unreserved GP. Section 6 examines whether this difference can be mostly attributed to the effect of the policy on the gender of the Pradhan. Section 7 concludes.

2 The Policy and Design of the Study

2.1 The Panchayat System in West Bengal

The Panchayat is a system of village level (Gram Panchayat), block level (Panchayat Samiti), and district level (Zilla Parishad) councils, elected by the people, responsible for the administration of local public goods. The Panchayat system has existed formally in most of the major states of India since the early 1950's. However, in most states, the system was not an effective body of governance. Elections were not held and the Panchayats did not assume any active role (Ghatak and Ghatak 1999). This changed in West Bengal in 1977, when the Left Front Government gained power on a platform of agrarian and political reform. The most important part of the land reform was tenancy reform, which enabled tenants to register and restricted the eviction of registered tenants (Banerjee, Gertler and Ghatak Forthcoming). The major political reform was to give life to a three-tiered Panchayat electoral system. The first election took place in 1978 and elections have taken place at five year intervals ever since. The first election took place in the middle of a major political and social upheaval resulting from the land reform, which arguably allowed the Panchayat to assume an important political role, independent of the traditional landowning class. This may account for the importance of the institution in West Bengal, compared to most other states of India (Ghatak and Ghatak 1999).

Each Gram Panchayat (GP) encompasses 10 to 12 villages and a population of about 10,000 people. The GP do not have jurisdiction over urban areas, which are administered by separate municipalities. Voters elect a council, which then elects among its members a Pradhan (chief) and an Uppa-Pradhan (subchief). The council takes decision by majority voting (the Pradhan does not have veto power). The Pradhan, however, is the only member of the council with a full-

time appointment. The major responsibilities of the GP are to administer local infrastructure: repair public buildings (such as schools), maintain and construct drinking water and irrigation facilities, excavate ponds (used for bathing, fishing and irrigation), and maintain and construct roads. The main source of financing for these projects are state grants (the 73d amendment stipulates that the ultimate objective is that 40% of the each State's budget is to be spent by the Panchayats). Until 1992, district funds were distributed through "schemes" earmarked for a specific purpose. In 1992, the 73rd amendment to the Constitution of India established the framework of a three-tiered Panchayat System with regular elections throughout India. It gave the GP the primary responsibility for implementing development programs, as well as identifying the needs of the villages under its jurisdiction. The main source of financing is still the state, but the money which was previously earmarked for specific uses is now allocated through four broad schemes. Money is allocated under the Jawhar Rozgar Yojana (JRY) scheme for work in public infrastructure. Second, there is a separate scheme for drinking water projects. Third, GP have the responsibility to identify beneficiaries of social programs and disburse funds (widow's pension, relief, etc.), and receive funds for this purpose. Finally, the GP receives money for its own operation (salary of secretary, honorarium for the Pradhan, building maintenance, etc.) The GP was also given the right to collect income on its own, through taxation of assets, and the establishment of collective fisheries. According to balance sheets which we could collect in 40 GP the JRY accounts for 30% of total GP income, the drinking water scheme, 5%, the welfare programs, 15%, the grant for GP functioning, 33%, and the GP own revenue for 8%.

Following the 73rd amendment, the GP was given additional responsibilities in West Bengal. First, they were entrusted to establish and administer informal education centers (called SSK), an alternative form of education for children who do not attend school (a non-qualified instructor teaches children three hours a day in a temporary building or outdoors). They must also oversee adult literacy programs. Most importantly, since May 1998, they are required to organize two meetings per year, called "Gram Samsad". These are meetings of villagers and village heads in which all voters may participate (one Gram Samsad is organized for each 700 voters). The GP council submits the proposed budget to the Gram Samsad, and reports on their activities in the previous six months. Gram Samsads have been regularly held in most locations since September 1998. While attendance is far from universal (16% of eligible participants), a study

of 20 Gram Samsad meetings by Ghatak and Ghatak (1999) shows that the meetings give rise to active debates over the kinds of projects that should be undertaken and the effectiveness of implementation of past projects, as well as charges of corruption and mismanagement.

The GP has no direct control over the appointment of formal teachers or health workers. It is, however, supposed to monitor their performance. It also helps organize health information campaigns and immunizations. Finally, it is responsible for organizing women's organizations and committees for the management of community-based fisheries, forests, drinking water infrastructure, and schools.

2.2 Reservation for Women

In 1992, the 73rd amendment provided that one third of the seats in all Panchayat councils as well as one third of the position of Pradhan must be reserved for women. Seats and Pradhan's position were also reserved for the two disadvantaged minorities in India, "scheduled castes" (SC) and "scheduled tribes" (ST), which mandated representation proportional to each minority's population share in each district. States were asked to modify their electoral rules to conform to this amendment.

In West Bengal, the Panchayat Constitution rule was modified in 1993, and reserved one third of the position of councilors in each GP to women: in a third of the villages in each GP, only women could be candidate for the position of councillor for the area. The proportion of women elected to Panchayat councils increased to 36% after the 1993 election. The experience was considered a disappointment, however, because very few women (196 out of 3,324 GP) advanced to the position of Pradhan, which is the only one that yields effective power (Kanango (1998)).

To conform to the 73d amendment, the Panchayat Constitution Rules of West Bengal were again modified in April 1998 (Government of West Bengal 1998). In addition of the reservation at the village level within each GP, one third of GP were selected to be reserved for a female Pradhan: in those GP, the council members had to elect one of their female members as Pradhan. Likewise, a proportion of GP equal to the share of the share of SC and ST in the population had to be reserved for SC and ST. A specific set of rules ensured a random selection of GP where the office of Pradhan were to be reserved for a woman. All GP in a district were ranked

in consecutive order, according to their serial legislative number (an administrative number predating this reform). They were then ranked in two separate lists, according to whether or not the seats had been reserved for a SC/ST or not (these reservations were also chosen randomly, following a similar method). Using these lists, every third GP starting with the first on the list was reserved for a woman for the 1998 election.[4]

From discussions with the government official at the Panchayat Directorate who devised the system and district officials who implemented in individual districts, it appears that these instructions were successfully implemented throughout the state. More importantly, in the district we study, we could verify that the policy was strictly implemented. After sorting the GP into those reserved for SC/ST and those not so reserved, we could reconstruct the entire list of GP reserved for a woman by sorting all GP by their serial number (allocated several years before the law was passed), and selecting every third GP starting from the first in each list. This verifies that the allocation of GP to the reserved list was indeed random, as intended. Table 1 indicates the number of female Pradhan is reserved and unreserved GP. All Pradhan in GP reserved for a woman are female. Only 6.5% of them are female in unreserved GP. The policy thus had a large effect on the proportion of female Pradhan in the district.

2.3 Data Collection and Empirical Strategy

In the summer of 2000, we conducted a survey of all GP in the district of Birbhum, West Bengal. Birbhum is located in the western part of West Bengal, about 125 miles from the state capital, Calcutta. At the time of the 1991 census, it had a population of 2.56 million. Agriculture is the main economic activity, and rice is the main crop cultivated. The male and female literacy rates were 50% and 37%, respectively, lower than the West Bengal average of 67% and 47%. The district is known to have a relatively well-functioning Panchayat system.

There are 166 GP in Birbhum, of which five were reserved for pre-testing, leaving 161 GP in our study. Table 2 shows means of the most relevant village variables collected by the 1991 census of India in reserved and unreserved GP, and their differences. Panel A shows GP level variables, and panel B shows village level variables.[5] As expected given the random selection

[4]For the next election (in 2003), every third GP starting with the second on the list was reserved for a woman, etc... The Panchayat Constitution rule has actual tables indicating the ranks of GP to be reserved in each election.

[5]The standard errors, like in the rest of the paper, are adjusted for clustering at the GP level, but the statistical

of GP, there are no significant differences between reserved and unreserved GP. Reserved GP have a somewhat smaller total population, but this difference is not significant. At the GP level, the total number of health facilities, the number of public health facilities (hospital and primary health centers and subcenters), and the number of schools of all types is very similar in reserved and unreserved GP. Unreserved GP are marginally more likely to have a hospital. At the village level as well, all variables are very similar in reserved and unreserved GP. Note that very few villages (3% among the unreserved GP) have tap water, the most common sources of drinking water being handpumps and tubewells. Most villages are accessible only by a dirt road. 91% of villages have a primary school but very few have any other type of school. Irrigation is important: 43% of the cultivated land is irrigated (some land is irrigated in all villages). Very few villages (8%) have any public health facility.

We collected the data for this study in two stages. First, we conducted an interview with the GP Pradhan. We asked each a set of questions about his or her family background, education, previous political experience, and political ambitions, as well as a set of questions about the activities of the GP since his or her election in May 1998. We then completed a survey of three villages in the GP: two villages randomly selected in each GP, plus the village in which the GP Pradhan resides. During the village interview, we drew a resource map of the village with a group of 10 to 20 villagers. The map featured all the available infrastructure in the village, and we asked whether each of the available equipment items had been built or repaired since May 1998. Previous experience of one of the authors, as well as experimentation during the pre-testing period, suggest that this method yields extremely accurate information about the village. We then conducted an additional interview with the most active participants of the mapping exercise, in which we asked in more detail about investments in various public goods.[6] For all outcomes for which it was possible, we collected the same information at the GP level and at the village level. The village level information is likely to be more reliable, because it is not provided by the Pradhan, and because for villagers, recalling investments made in their village in the last two years was easy. However, the information given by the GP head refers to investment in the entire GP, and is thus free from sampling error. Therefore, when an outcome

insignificance of these differences does not depend on this correction.

[6]The questionnaires are available upon request or on line at http://web.mit.edu/eduflo/www/.

is available at both levels, we perform the analysis separately for both, and compare the results.

Due to the randomization built into the policy, the basic empirical strategy is straightforward. Under the assumption that the reservation does not affect investments in unreserved GP, the reduced form effect of the policy can be obtained by comparing the mean of the outcomes of interest in reserved and unreserved GP. Denoting Y_i the value of the outcome of interest (say, investment in drinking water between 1998 and 2000) and R_i a dummy equal to 1 if the GP is reserved for a woman, this is simply:

$$E[Y_i|R_i = 1] - E[Y_i|R_i = 0]$$

In the village level regressions, the standard errors are adjusted for possible correlation within GP using the Moulton correction (Moulton (1986)).[7] Unless otherwise indicated, we run village level regressions using only the data for the two villages we selected randomly, since the Pradhan's villages are not random and may be selected differently in reserved and unreserved GP.

Since all the reserved GP have a female Pradhan, and only 6.5% of the unreserved GP do, this reduced form coefficient is very close to the coefficient that one would obtain by using the reservation policy as an instrument for the Pradhan's gender.[8] We will therefore focus on the reduced form estimates, which are directly interpretable as the effect of the reservation policy. When interpreting these results, it should be kept in mind, that women elected as Pradhan differ from men in many important dimensions, other than gender. In particular, they are much more likely to be new leaders, and they are probably less likely to be re-elected in the next election.[9] The reduced form estimates capture all these potential effects.

A very interesting feature of the experiment in West Bengal is that it is possible to try to disentangle the effect of gender *per se* from these other effects of reserving electoral seats to specific groups.

[7]The outcomes we consider are jointly determined, since they are linked by a budget constraint. However, because the regressor is the same in all outcome equations, a joint estimation of the system of equations would produce coefficients and standard errors numerically identical to OLS estimation equation by equation.

[8]The instrumental variable estimate would simply be the reduced form estimate scaled up by a factor of 1.075. (The ratio of the reduced form effect and the difference in the probability that a woman is elected in reserved vs. unreserved GP, which is equal to 93%

[9]Recall that the reservation rotates: seats that were reserved in 1998 will not be reserved again in 2003.

First, we can control for whether the Pradhan is new or not. It would not be legitimate to compare investments in all unreserved GP where Pradhan are new to those in reserved GP: the fact that the Pradhan is new may reflect unobserved characteristics of the GP, and this non-random sample selection would bias the results. There is, however, a random subset of unreserved GP where the Pradhan is always new in office. Individuals may run for a council seat only in the village in which she or he resides. Once elected, the councilors choose one of them to be Pradhan. As part of the reservation scheme, one third of council seats (identified by village) were reserved for women: thus, if the previous councilor was a man, and his seat was reserved for a woman in the 1998 election, we can be sure that the Pradhan for that GP will be new to office. We can therefore compare women Pradhan to this subgroup of new Pradhan, to control for the fact that the Pradhan is new in office. Clearly, this does not fully control for the Pradhan's experience: even new Pradhan could be experienced politicians.

Second, we can control for whether the Pradhan is likely to be re-elected in 2003. Every third GP starting with the second in the list will be reserved for a female Pradhan for the 2003 election. Pradhan in those GP should realize that they will not be able to stand for re-election as Pradhan (if their particular seat is not reserved, they may still be able to run for a position of member of the GP council). We therefore restrict the sample to GP reserved in 1998 and those which will be reserved in 2003, to examine whether and to what extent the differences we observe are due to the fact that women may not think they have a chance to be reelected.[10] Again, men could still have a longer horizon in office than women, if they plan to be elected on another position or be elected again in 10 years.

Finally, we take advantage of the reservation of about 44% of the seats to SC and ST. These reservation were also selected randomly, and within each list, one third of positions were reserved for women. Irrespective of their gender, all the leaders elected under this reservation policy tend to be new leaders and to be elected in large part due to the quota system. They also tend to

[10]There are other reasons why a Pradhan may not be able to be a candidate in the next election: His GP could be reserved for a SC or ST Pradhan. We do not exploit this because the system of SC reservation is based on a table of random numbers, so it is much more difficult for a Pradhan (and us) to figure out whether the seat will indeed be reserved. His seat could also become reserved. We do not have the list of serial numbers within GP, so we could not exploit this either. This does not invalidate our strategy: it is clear that in the subset of GP to be reserved in 2003, the term limit does apply for all Pradhan.

be poor, and to come from small villages. Therefore, we restrict the sample to GP that are reserved for SC and ST. Remaining differences between investments in GP reserved for SC/ST and those reserved for female SC/ST should be largely attributable to gender.

3 Why Would Mandated Representation of Women Affect Policy Decisions?

Women and men have different policy priorities. In developed countries, women are more likely to support liberal policies, a difference known as the "gender gap". The composition of the voter pool is therefore likely to affect policy outcomes.[11] In developing countries, women's and men's roles are different, and they may therefore have different needs and favor different types of investment. The primary responsibilities of women in rural West Bengal, besides working on the fields, are to fetch water and fuel and to take care of children. Child health has been shown to be more responsive to women's income than to men's income (see for example Thomas (1990), Thomas (1994), and Duflo (2000)), which indicates that women are more concerned than men about child health. It has also been suggested that the degree of women's involvement in collective decision making affects policy decisions. For example, a study of rules set up by village forest conservation committees in India shows that rules are very different in villages where women participated in their elaboration (Agarwal (1997)).

However, the fact that men and women have different preferences is not enough to imply that policies would be influenced by direct manipulation of the gender of representatives through quotas. In a Coasian world, public good allocation should be unaffected (the efficient allocation should be achieved both before and after the policy). The additional bargaining power the policy confers to women should translate into higher transfers to women. Even if these transfers are not available, if the candidates could commit during the electoral campaign to a set of policies, and if candidates knew the preferences of the voters, then electoral incentives would cause candidates to commit to the policy bundle favored by a majority of electors. In this case,

[11] Lott and Kenny (1999) show that giving women the right to vote increased the size of state governments. They argue that women's preference for bigger government stems from their greater need for insurance. Edlund and Pande (Forthcoming) suggest that the gender gap is indeed related to women's expected need for insurance: the gender gap is bigger in states where divorce is easier.

the gender of the elected official would not affect policy. There are therefore two main lines of argument why mandated representation of women could affect policy decisions. The first is based on the idea that elected representatives cannot commit *ex ante* to a set of policies. In this context, political reservations for women affect both the gender of the politicians and its selection. Pande (1999) discusses most of these arguments in the context of the reservations for Scheduled Castes and Scheduled Tribes for the legislative assemblies in India, and presents evidence that the reservations did affect outcomes. The second is based on the idea that the presence of women representatives affects the mechanism by which preferences are aggregated.

Empirical evidence suggests that the preferences of legislators strongly affect the decisions they make. For example, Levitt (1996) shows that senators' individual ideology is the single most important factor explaining the way they vote. If the politicians do not commit *ex ante* to a set of policies, the identity of the elected official will determine policy decisions (Alesina (1988), Osborne and Slivinski (1996), Besley and Coate (1997)). Constraining the candidate to be a woman may then affect policy decisions, if the overlap between women's and men's policy preferences is not exact. In the US, it has been shown repeatedly that female legislators have different policy priorities than men (see, e.g. Thomas (1991),Carroll (1994),Thomas (1991)). The idea that women tend to be more public spirited, less corrupt, and more "fair" is often advanced as an argument in favor of active measures to facilitate women's participation in political decisions (World-Bank (2001), Dollar et al. (1999)). Women attach more importance to, and spend more time advocating, women's issues (abortion, equal opportunity) and child welfare issues (such as child support), while men concentrate on business and economic policy.[12] Thus, the number of female legislators predicts whether policies preferred more by women than men will be adopted (Berkman and O'Connor (1993), Besley and Case (1997)).

The reservation policy does not affect only the Pradhan's gender, however. It affects the process by which she is chosen. First, since there were very few women active in politics before the reservation policy was enacted, women elected under the policy are less likely to be incumbents. This could have positive or negative effects: incumbents may have more clout and know the system better. Alternatively, newly elected leaders may be more willing to start more new

[12]Saltzstin (1986) also shows that municipalities with women as mayors tend to have a higher proportion of women in municipal employment, which suggests that women placed in power try to act in women's interest.

projects.

Second, the reservation constrains voters to choose among a limited set of candidates. Even if there is not a competent woman, they have to choose one in reserved GP (while they are always free to choose a competent woman in unreserved GP if there is no competent man). This may thus affect the leader's quality. The average woman is also less educated than the average man, less assertive, and less likely to have worked outside her home.

Third, women may have little hope of being re-elected outside the quota system, and since the seats are reserved by rotation, they may have less political ambition. This is potentially important, as the desire to be re-elected may provide an incentive for the elected representatives to behave while in office.[13] Khemani (2000) suggests that Indian voters are more "vigilant" in state elections than in national elections. The Gram Samsad (village meeting) institution ensures a high level of accountability for GP Pradhan, which suggests that the need to please constituents in order to be re-elected may affect Pradhan' activities.

Fourth, the reservation policy may alter political competition. For example, if women fielded by parties on the right were known to be less demanding for women's rights than women fielded by parties on the left, this may push some marginal male voters toward the right. It could thus affect policy decisions even on dimensions that are not directly relevant to women.

It has been suggested that all of these factors may not be relevant in the context of reservation in India, because most women representatives act simply as proxy for their husbands. However, women's quotas could affect policy decisions even if elected women had the same preferences as elected men, or if all elected officials attempt to maximize the same social welfare function: the sex of the Pradhan may effect how information is transmitted. Both legally and in practice, the most important role of the Pradhan is to aggregate information and decide how to spend relevant resources. This is done in the Gram Samsad, and during office hours at which the Pradhan meet with villagers. However, the participation of women at the Gram Samsad is very limited (only 9% of participants were women in the 20 Gram Samsad studied by Ghatak and Ghatak (1999)), and even when women are present, they rarely raise questions. The fact that a Pradhan is a woman may then affect the participation of other women to this process

[13] Besley and Case (1995) present evidence that this effect is important for governors in the United States. Governors who face term limits make decisions that are less likely to please voters (such as increasing taxes).

of aggregating information. The fact that a woman is present in a position of authority may encourage other women to raise issues, either during the Gram Samsad meetings or during her office hours. Their remarks may be less likely to be taken desultorily.[14] Enabling women to express their concerns may have very important effects on policy, even if the leader is not herself very sensitive to women's issues (and even if she is a proxy for her husband). Banerjee and Somanathan (2001) show that a leader who is more aware of the underlying preferences of her constituents is more likely to get them to talk and more likely to get information from them that materially alters her decision. Thus the fact that a woman leader knows the other women better than the male leader she replaces, will help her elucidate better their needs, even if she is not particularly inclined towards women's causes herself.

In the next section, we provide evidence on some of these intervening mechanisms: the characteristics of the female Pradhan (including their background, their political affiliation, their prior political experience and their political ambitions) and the effect of the gender of the Pradhan on women's participation. In section 5, we turn to the main question of interest: does the gender of the Pradhan affect the the provision of public goods in the community?

4 Leaders and Voices: Characteristics of Female Pradhan and Political Participation of Women

4.1 Characteristics of Female Pradhan

Table 3 presents differences by gender in the Pradhan's background (panel A), her previous political involvement and political ambition (panel B), and other's perceptions of her. Column (1) presents the average in reserved GP, and column (2) presents the average in unreserved GP. Column (3) presents the difference. Standard errors are in parentheses. Female Pradhan are significantly less educated and less likely to be literate. They also come from a more disadvantaged background, which may be surprising: they are more likely to be officially classified as

[14]There is some evidence indicating this may be important: In the US, Thomas (1991) show that the degree to which a woman legislator supports women's issues depends on the number of other women in the assembly, or the existence of a female caucus. In India, the study of joint forest management committee by Agarwal (1997) referred to earlier also indicates that women talk more when there are more women in the meetings.

being below the poverty line, and they own fewer durable household goods.[15] They come from smaller villages than men. This does not contradict the fact that GP reserved for women are no different from unreserved GP. Men often come from the biggest villages within their GP, while women come from villages that are similar to the average village. Our interviewers are more likely to report that female Pradhan are shy in answering the questions (and that someone else may be answering on their behalf).

The results in panel B of table 3 confirm that female Pradhan have less political experience prior to the 1998 election. 89% of women (and 57% of men) holding reserved positions had not been elected to any Panchayat position and most had not even participated in any Panchayat activity. None of them had served as Pradhan (12% of men had). Women are only slightly less likely to have received any training than men Pradhan, which reflects governments efforts to train the new Pradhan and counselors elected under the reservation rule (Kanango (1998)). They are more likely to be helped by their spouse (43% of the women in reserved positions report that they are helped by their spouse, compared with 13% of the men). 17% are the spouse of a former Panchayat counselor or Pradhan. The worry that women may be their husband's proxy is thus not without foundation. Women are also more likely to claim that they will not run again.

The reservation policy does not seem to affect party affiliation: the percentage of Pradhan in each political group (left front, right, and Congress) is identical in reserved and unreserved GP.

4.2 Effects on the Political Participation of Women

Table 4 displays the effect of having a woman Pradhan on the political participation of women. The percentage of women among participants in the Gram Samsad is significantly higher when the Pradhan is a woman (increasing from 6.9% to 9.9%). Since reservation does not affect the percentage of eligible voters attending the Gram Samsad, this corresponds to a net increase in the participation of women, and a decline in the participation of men. This is consistent with the idea that political communication is influenced by the fact that citizens and leaders are of

[15] We asked whether the Pradhan's household owned a television, had electricity in the home, had a telephone, a bicycle, a motorcycle, and a car. The durable goods variable is simply the sum of all of these variables.

the same sex. Women are also more likely to ask a question at the Gram Samsad (the proportion increases from 0.29 to 0.38, although the difference is not significant at the 95% level). Finally, women in villages with reserved Pradhan are twice as likely to have addressed a request or a complaint to the GP Pradhan in the last 6 months, and this difference is significant.[16] The fact that the Pradhan is a woman therefore significantly increases the involvement of women in the affairs of the GP.

When women had raised an issue, we asked the villagers which issue they had raised. Our questions were open ended, and we classified them ex-post into broad categories. We then re-surveyed a random sub-sample of 48 villages, and asked about issues raised by men. Table 5 shows the range of questions, the fraction of total questions concerning each issue asked by women (in column (1)), and by men (in column (2)). Drinking water and roads were by far the issues most frequently raised by women (26% and 24% of the questions, respectively). The next most important issue was welfare programs (these programs mainly target women: they are maternity grants, widows' pension, and old age pensions), followed by housing and electricity. Road improvement is also the issue most frequently raised by men (22%). Three other issues are raised relatively frequently by men: irrigation (17%), education (14%), and drinking water (14%). This is consistent with the evidence in Ghatak and Ghatak (1999) on the questions raised (by men) at 21 Gram Samsads in West Bengal: The questions that appeared most frequently have to do with mis-management or corruption in program implementation (in about half the villages), irrigation needs, road building, and the choice of program beneficiaries or of project locations. Road building thus seems to be a concern common to men and women: road construction projects are employment generating activities (especially for women), and poor roads also make communication very difficult during the rainy season. Women are more concerned about drinking water than men, and less concerned about irrigation and education.

In the next section, we examine whether the gender of the Pradhan affects the quantity and the type of public goods provided and if the effect is consistent with the preferences described above.

[16] In the subsample of villages which we conducted follow up surveys we also asked whether men had brought up any issue in the last 6 months. In all cases but one (a reserved GP), they had.

5 Effects of the policy on Public Goods Provision

5.1 Public Action

In table 6, we examine whether the level of organization in the village is affected by the reservation policy. We have seen above that women were more active politically in villages where the Pradhan is a woman. Is it because female Pradhan are generally more effective at inducing collective participation? To answer this question, we examine variables that reflect the extent of organizations that the GP is supposed to sponsor: number of women's organizations, number of water and forest management committees, number of village education committees, areas brought under social fishery and social forestry, and proper organization of the Gram Samsads. For none of these dimensions of organization is there a significant difference between male and female GP.

For a subset of GP (100), we collected information on their own revenue collection. GP depend mostly on the state for resources (less than 8% of their budget come from GP revenue collection), but they are authorized to collect revenues locally. Even after controlling for the GP population, the amount of funds collected by the GP is significantly smaller in GP reserved for women. Tax collections as well as revenues from other sources (fisheries, forestry, ponds, etc...), are smaller in GP headed by women. The difference in tax collection is small compared to other source revenue, which, in GP headed by women, is only half as large as in non-reserved GP. One possible explanation for these results is that revenue collection is far from being straightforward: collecting revenues requires effective persuasion power, with respect to the individuals who owns the taxable properties, and to the representative of the villages where the GP ponds and forest are located.

GP, however, depend mostly on the state for resources, allocated largely in proportion to the GP population. In the 40 GP for which we have complete budget data (including government funds), the total budget is not significantly different in male and female GP.

5.2 Public Good Investments

Table 7 presents the effects of the Pradhan's gender on all public good investments made by the GP since the last election, in May 1998. As we aggregated investments in categories, these

regressions reflect all the data we collected on public good investments. We present both village and GP level regressions. The main results are consistent across the GP and village level data. The gender of the GP Pradhan affects the type of public goods provided.

Both at the GP level and at the village level, there is significantly more investment in drinking water equipment and roads in GP where the Pradhan is a woman. In addition, there is also more investment in other labor intensive projects (culvert and minor irrigation canals), a variable we have only at the GP level. The magnitude of these effects is large: there is almost twice as much investment in drinking water equipment in GP where the Pradhan is a woman, and the roads are almost twice as likely to be in good shape. In all GP where the Pradhan is a woman, tubewells were built, and labor intensive construction work was undertaken. Major roads are 20% more likely likely to have been repaired in women's GP (dirt roads were repaired in all GP).

The village level regression (though not the GP regression) also shows a very large difference in the introduction of biogas projects (biogas projects were introduced in 6% of the unreserved GP, and 26% of the reserved GP). Biogas projects are installations that produce methane gas, used for cooking or lighting, from animal waste. They are a substitute for cooking fuel and electricity. Collecting cooking fuel, as well as water, is primarily a woman's task, and in Birbhum, where the forest cover is very limited, obtaining wood can be particularly difficult.

Both the GP and the village level regression show a negative (and large in the village level regression) but insignificant impact of having a woman Pradhan on investment in sanitation. This might seem somewhat surprising, but it should be noted that women never raised sanitation as an issue.

Finally, there is less investment in informal education for children in GP headed by women. Since 1998, the GP have been given the responsibility of organizing informal education centers, by hiring and paying someone without formal qualifications to teach children not attending school in a temporary building (or outdoors). They receive the authorization to set a center up from the higher level of the panchayat or from the block level administration. Both at the GP and the village level, the number of centers is negatively associated with the fact that the woman is a Pradhan. The coefficient is significant at the 95% only in the GP level regression, but the point estimate in the village level regression is large in magnitude: villages located in GP where

the Pradhan is a woman are only half as likely to have an informal education center than villages in GP where the Pradhan is a man. To confirm the validity of these results, we also regressed the number of teachers, teachers per capita, children, and children per capita, at the informal center (the regressions are omitted to save space). At the GP level, the coefficient of the woman dummy is significantly negative for all these variables. There is no difference in investments in the repair of school buildings. However, in GP headed by women, there is more investment in buildings used for *adult* education (of which women are more often beneficiaries). Note that there are almost no investments in the repair of the adult literacy centers in GP headed by males, even though all GP receive an allocation specifically earmarked for adult education.[17] To shed some light on this result, we restrict the sample to GP where the Pradhan is literate (this result has to be taken with care, this the fact that the Pradhan is literate is certainly not random): the effect is smaller among literate Pradhan, suggesting that some of the negative effect of women on children's education may be related to the fact that they are themselves less educated.

These results suggest that the reservation policy has important effects on policy decisions at the local level. These effects are consistent with the policy priorities expressed by women (drinking water, road and power were the highest priorities of women, and education was a low priority of women, and a priority of men) and with the view that women's priorities are closely linked with their role in the household. It should be noted that women's main preoccupations are also important issues for men. If we combine women's and men's requests (and give an equal weight to both genders), drinking water and roads are by far the most important issues. The decisions in reserved GP may thus correspond better to the entire's village preferences.[18]

[17] Female GP, on the other hand, are no more likely than male GP to have had a literacy campaign since 1998.

[18] It is unfortunately not practical to assign a monetary value to these investments, and thus to compare them. The fact that most investments are equal or greater in women's GP suggest that women may be more efficient than men in spending the available resources.

5.3 Influence

The GP has no control over the establishment of health centers, or administrative appointments such as health workers, doctors, or school teachers.[19] However, it is supposed to exercise some control over health workers and teachers, although in practice its influence over them is often limited. Likewise, they have no direct control over the establishment of pre-primary child care centers (Angan Wadi), which are controlled by a centrally administered program (The Integrated Child Development Service), but they may seek to influence their placement. In table 8, we examine whether the gender of the Pradhan also affects outcomes over which she yields only indirect influence. The first two rows indicate that the gender of the Pradhan has no influence on the opening of pre-schools. There were slightly fewer than two centers open per GP on average since 1998, but they were equally distributed in female-headed and male-headed GP. This is somewhat surprising, as child care is generally thought of as a woman's priority.

The next two rows confirm the results we obtained regarding informal education. Male Pradhan are much more likely to report that the village education committee (instituted in all GP since 1993) is effective. Since this is the Pradhan's own report, this could indicate that men are more likely to report that they have influence. The next row suggests that the villagers do not find male Pradhan more effective in controlling the primary schools. However, when asked which problems they thought were present in the primary schools, men were more likely to report low teacher turnout as a problem. Since this is one of the principal problems of primary education, and one that effective monitoring by village institutions could most likely affect, this suggests that male Pradhan are better informed, and may be more concerned, than female Pradhan about the quality of education in the GP. This does not seem to be due to the fact that schools perform less well in GP headed by men: when asked, the villagers are equally likely to report that teacher attendance is a problem.

The next rows suggest that the opposite is true for health workers. The number of visits by health workers to the village in the last six months is significantly higher when the Pradhan is a woman. This difference is entirely attributable to a difference in the number of visits to villages that do receive visits by health workers, not a difference in the number of villages in a

[19] We collected data on these variables and verified that the number of health workers or teachers is not affected by the gender of the Pradhan.

GP that receive visits. This suggests the difference may be due to active monitoring: Pradhan have no influence on the route of village health workers, but female Pradhan seem to be effective in getting health workers to actually visit villages they are supposed to visit.

5.4 Do Women Invest Less in Their Own Villages?

Our last set of results in this section uses data on investments in the Pradhan's village, which we have not exploited thus far. The interpretation of these results is not as straightforward as in the rest of the paper, since the Pradhan's village is not chosen randomly, meaning sample selection may be different in reserved and non-reserved villages. As we have seen above, male Pradhan come from bigger villages, while female Pradhan, especially those whose husbands are not politically influential (i.e., those who are not "helped in their jobs") come from more ordinary villages.

Nevertheless, the results in this data are striking. In table 9, we use as a dependent variable the same investment variables as in table 7. We run the following regression:

$$y_{ij}^k = C^t + \alpha^k R_i + \beta^k P_{ij} + \gamma^k R_i * P_{ij} + \delta \text{Population} + \epsilon_{ij}^k,$$

where y_{ij}^k is the investment in good k in village j of Panchayat i, R_i is a dummy that indicates whether the GP is reserved for a woman, and P_{ij} is a dummy that indicates whether village j is the Pradhan's village. Thus, β^k is the expected difference between investment in Pradhan's and non Pradhan's village in unreserved GP, and γ^k indicates whether the difference is the same among reserved GP. We control for the size of the villages, which is systematically different in Pradhan's village, and in men's village in particular. Columns (1) and (2) of table 9 report β^k and γ^k. The first striking fact is that almost all investments are significantly larger in the Pradhan's village. These differences are usually larger than the constant, indicating that the Pradhan's village receives more than twice as much as other villages receive, even after controlling for their size. Second, the coefficient of the interaction between the Pradhan's village and female Pradhan is negative for all outcomes but one, and significant for three individual outcomes as well as for all investments taken together (shown in the last line). The coefficients of the interaction are of the same magnitude as the coefficient of the direct Pradhan effect: there is no difference in investment between the Pradhan's village and other villages when the Pradhan is a woman.

As we discussed in section 4, female Pradhan tend to come from smaller and poorer villages, especially when they are not helped by their husband. This may account for the discrepancy between male and female-headed Pradhan villages, even though we control for population size in these regressions. To examine whether this is the case, we ran the same regressions using only male Pradhan and Pradhan who are helped by their husbands. Female Pradhan who are helped by their husbands come from villages which are similar to those of male Pradhan.[20] The results are at least as strong in this subsample. This suggests that the coefficients of the interaction are not pure artifacts of a composition bias in the sample, and that female Pradhan do indeed invest less in their own villages.

This difference may be explained by different levels of political ambition among women and men. To be re-elected, the Pradhan must first be elected as a council member in his or her own village. Because women are less likely to seek re-election, they need to please their own electors less. Levitt (1996) shows that senators are more likely to cast votes benefiting their own constituencies when an election is near. Alternatively, women may have a weak bargaining position vis-a-vis the other GP member on the locations of these investments.

6 Separating Gender and other effect of reservations

The results we discussed so far could be attributed to other characteristics of the newly elected women. First, they are inexperienced politicians. Second, they are more likely to be perceived (by themselves or others) as "lame ducks". Finally, we have seen that they are poorer, and come from smaller villages than men. All these factors may affect their decisions. In this section, we use specific reservation rules to control for these characteristics.

6.1 Women are new Pradhan

In our sample, all the women who were elected in reserved position are new to the position of Pradhan, whereas 12% of male Pradhan have previously served as Pradhan. Males also have more experience as member of the GP council. This could have a direct influence on the

[20]The difference between the population of villages of male Pradhan and that of female Pradhan helped by their husband is only 250, and is not significant.

investments made by men and women: inexperience Pradhan may have a hard time achieving their objectives. On the other hands, they may be more energetic and want to start new project. They may also favor new projects, rather than continuing existing projects.

To investigate whether the effects of reservation is in part due to the fact that women are newly elected, we compare them to another set of Pradhan who were newly elected due the reservation policy at the village level: we compare investments in reserved GP to those in GP where the previous Pradhan was prevented from re-election because his village was reserved for a woman.

These results are presented in column (2) of table 10. For comparison, column (1) reproduces the results for the entire sample. In this sub-sample, all Pradhan are elected for the first time. Men are, nevertheless, more experienced politicians: they are still more likely than women to have served in the GP council before, but the difference is now smaller (0.24 instead as 0.32 in the entire sample). The point estimate for all the other results are unaffected, except for the probability that a metal road was repaired, where the differences between reserved and unreserved GP falls from 0.18 to 0.09. The coefficient on the quality of the roads in the village, however, remains unchanged, suggesting that day-to-day repairs remain more frequent in villages in reserved GP. This may suggest that repairing a main road is among the first thing a new Pradhan does. This may be a very public gesture, since it is at the top of the priority of both men and women.

However, none of the other results change. This suggests that the effect reservation for women has on policy cannot entirely be attributed to the fact that these women are new Pradhan.

6.2 Women are lame ducks

In column (3) of table 10, we present the difference between GP reserved in 1998 and those who will be reserved in 2003. In these GP, the Pradhan faces a term limit. We determine which GP will be reserved in 2003 by following the allocation rule (which was strictly followed in 1998). Of course, this does not necessarily imply that the Pradhan themselves effectively realize that the GP will be reserved for a woman. Moreover, men could have a longer time horizon for the career than just the next election. In fact, Pradhan in GP that will be reserved in 2003 are still more likely than women to say that they want to run for the GP council again (they can still

be a candidate for the council as long as their seat is not reserved).

The results for all other outcomes are essentially unaffected. With all the caveats mentioned above, this still suggests that the results are not driven by women's low immediate prospects.

6.3 Other effects of reservation

It is also possible to control to some extent for these and other differences between men and women, in particular for the fact that women tend to come from poorer families and smaller villages, using minority reservations. Positions of Pradhan were reserved for Scheduled Castes and Scheduled Tribes, proportional to their population in the district (34.5% and 11.5%, respectively). The 1998 Panchayat Rules prescribe that the randomization for women be stratified: among seats reserved for each group as well as among "general" seats, one third must be randomly selected to be reserved for women. Column (4) in table 10 shows the differences female and male GP in reserved GP. Since this policy was also enacted in 1998, most of the Pradhan in GP reserved for SC and ST are new. Only 2% (one) of the male Pradhan in SC/ST GP has previously served as Pradhan, and 22% have served as GP member. The difference in the proportion of incumbents is thus much smaller (14%) than in the entire sample, and not statistically significant. Men are still more likely to say that they may run again. Importantly, among SC/ST Pradhan, women and men come from villages of the same size, and men are not significantly richer than women. They are, however, better educated.

In column (4) of table 10, we compare outcomes in GP reserved for SC or ST. The results are very similar to what we found in all GP. The only notable exception is the weakening of the effect on the number of doctor visits in the village (which is due to the fact that even GP that are unreserved for women, there are more visits by doctors in SC and ST villages).

The last row of table 9 examines whether, even in GP reserved for SC and ST, women are less likely than men to invest in their own villages. The result is not changed: even in GP reserved for SC or ST, men are more likely to invest in their own village, while women aren't.

Irrespective of their gender, all SC/ST Pradhan are elected because of the quota system, most of them have no experience, and women and men share similar social background. The fact that most results remain unchanged suggest that the difference in public good investments was a consequence of the Pradhan's gender.

7 Conclusion

Mandated representation of women has important effects on policy decisions in local government.

Women elected as leaders under the reservation policy invest more in public goods most closely linked to women's concerns: drinking water, fuel, and road construction. They also appear to exercise influence over health workers to induce them to visit the villages more often.

The increase in investments in drinking water, fuel, and roads seems to come at least partly at the expense of investments in informal schooling. Men invest more resources in informal education centers, and seem also more aware of the need to exercise influence over teachers to elicit more regular attendance. This relative lack of interest of women in charge for education is not as surprising as the commonly held view that women strongly support everything that is good for children might suggests: among the problems mentioned by women in the village we surveyed, education appears relatively infrequently, whereas it is an important issue for men.

These results seems to be largely attributable to the effect of the policy on the gender of the Pradhan, rather than on its other effects: with only two exceptions, the results are virtually identical in the subsample of GP reserved for SC/ST, when we compare GP which will be reserved in 2003 to those that were reserved in 1998, and when we compare GP reserved to women to those where the Pradhan is also new due to the reservation policy.

Drinking water and irrigation, the two issues in which women invest more than men, are also among men's priorities. Leaders in reserved GP thus appear to better represent the preferences of the entire community than leaders in unreserved GP.

These results contradict the simple intuition behind the Downsian model, or the idea that political decisions are the outcomes of a Coasian bargaining process: in both of these views of the world, the fact that a woman is the head of the GP should not influence policy decisions. Indirectly, these results also confirm that the panchayat has effective control over the policy decisions at the local level. These results suggest that direct manipulation of the identity of the policy maker can have important effects on policy. This has important implications beyond reservation policy, suggesting that all mechanism that affect politician's identities (term limits, eligibility conditions, etc) may affect policy decisions. These results leave open the question of whether this is due to the increased participation of women in the political process, or to the

fact that the decision maker's preferences now reflect women's preferences, rather than men's.

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Table 1: Fraction of Women among Pradhans in Reserved and Unreserved GP

	Reserved GP	Non reserved GP	Difference
	(1)	(2)	(3)
Total number	54	107	
% Female	100	6.5	93.5
			(3.38)

Table 2: Village Characteristics in Reserved and Unreserved GP, 1991 Census

Dependent variables	Mean, reserved GP (1)	Mean, unreserved GP (2)	Difference (3)
A. GP Level			
Total Population	12606	13579	-973
	(570)	(329)	(614)
Number of public health facilities	0.76	1.10	-0.34
	(.17)	(.17)	(.26)
Number of health facilities (total)	7.15	7.10	0.05
	(.90)	(.67)	(1.14)
Number of Hospitals	0.00	0.09	-0.09
		(.05)	(.06)
Number of High Schools	1.19	1.37	-0.19
	(.17)	(.18)	(.29)
Number of Middle Schools	0.69	0.66	0.02
	(.11)	(.08)	(.13)
Number of Primary Schools	12.26	12.07	0.18
	(1.00)	(.37)	(.88)
B. Village level			
Total Population	974	1022	-49
	(60)	(46)	(75)
Female Literacy Rate	0.35	0.34	0.01
	(.01)	(.01)	(.01)
Male Literacy Rate	0.57	0.58	-0.01
	(.01)	(.01)	(.01)
% Cultivated land that is irrigated	0.45	0.43	0.02
	(.03)	(.02)	(.04)
Dirt road	0.92	0.91	0.01
	(.02)	(.01)	(.02)
Metal road	0.18	0.15	0.03
	(.03)	(.02)	(.03)
Bus or train stop	0.31	0.26	0.05
	(.04)	(.02)	(.04)
Number of Public health facilities	0.06	0.08	-0.02
	(.01)	(.01)	(.02)
Number of tuwells and hand pumps	1.13	1.20	-0.07
	(.11)	(.08)	(.14)
Number of drinking water wells	0.44	0.47	-0.02
	(.07)	(.04)	(.08)
Tap Water	0.05	0.03	0.01
	(.03)	(.02)	(.03)
Number of Primary Schools	0.95	0.91	0.04
	(.07)	(.03)	(.08)
Number of Middle Schools	0.05	0.05	0.00
	(.01)	(.01)	(.01)
Number of High Schools	0.09	0.10	-0.01
	(.01)	(.01)	(.02)

Notes:
1) There are 161 observations in the GP level regressions and 2120 observations in the village level regressions
2) Standard errors given in parentheses. In the village regressions they are corrected for clustering at the GP level

Table 3: Pradhan's Characteristics in Reserved and Unreserved GP

Depedent variables	Mean, reserved GP (1)	Mean, unreserved GP (2)	Difference (3)
A. PRADHAN'S BACKGROUND			
Age	31.87	39.72	-7.85
	(1.08)	(.87)	(1.45)
Education	7.13	9.92	-2.79
	(.48)	(.29)	(.54)
Literacy	0.80	0.98	-0.19
	(.06)	(.01)	(.04)
Married	0.89	0.87	0.02
	(.04)	(.03)	(.06)
Number of children	2.45	2.50	-0.05
	(.2)	(.15)	(.26)
Below poverty line	0.46	0.28	0.18
	(.07)	(.04)	(.08)
Number of household assets	1.72	2.36	-0.64
	(.18)	(.14)	(.23)
Population of pradhan's own village	1554	2108	-554
	(204)	(179)	(291)
Hesitates when answering the questions	0.75	0.41	0.34
(interviewer's impression)	(.06)	(.05)	(.08)
B. PRADHAN'S POLITICAL AMBITION AND EXPERIENCE			
Has been elected in the GP council	0.11	0.43	-0.32
before 1998	(.04)	(.05)	(.07)
Has been elected has pradhan	0.00	0.12	-0.12
before 1998		(.03)	(.04)
Took part in Panchayat activities	0.28	0.78	-0.50
before elected	(.06)	(.04)	(.07)
Knew how GP functioned	0.00	0.35	-0.35
		(.05)	(.07)
Did not receive any formal training	0.06	0.00	0.06
	(.03)		(.02)
Was spouse ever elected to the	0.17	0.02	0.15
Panchayat?	(.05)	(.01)	(.04)
Does spouse help?	0.43	0.13	0.30
	(.07)	(.03)	(.07)
Will not run again	0.33	0.21	0.13
	(.06)	(.04)	(.07)
C. PRADHAN'S POLITICAL PARTY			
Left Front	0.69	0.69	-0.01
	(.06)	(.04)	(.08)
Right (Trinamul or BJP)	0.19	0.18	0.01
	(.05)	(.04)	(.06)
Observations	54	107	

Notes:
(1) Standard errors are given in parentheses

Table 4: Effect of Women's Reservation on Women's Political Participation

Dependent variables	Mean, reserved GP (1)	Mean, unreserved GP (2)	Difference (3)
Participation rate in last Gram Samsad (in percentage)	12.33 (1.09)	13.07 (.9)	-0.74 (1.47)
Fraction of women among participants in the Gram Samsad (in percentage)	9.80 (1.33)	6.88 (.79)	2.92 (1.44)
Did women raise questions at the last Gram Samsad?	0.38 (.05)	0.29 (.04)	0.08 (.06)
Have women addressed a complaint to the GP in the last 6 months	0.20 (.04)	0.11 (.03)	0.09 (.05)

Notes
(1) Standard errors in parentheses
(2) There are 322 observations in the village level regressions
(3) Standard errors are corrected for clustering at the GP level in the village level regressions, using Moulton (1986) formula

Table 5: Issues Raised by Women and Men in the Last 6 Months

Issue	Fraction of issues raised by	
	Women	Men
	(1)	(2)
Drinking water	0.26	0.14
Road improvement	0.25	0.22
Welfare programs	0.10	0.04
Housing	0.09	0.05
Electricity	0.08	0.08
Child care	0.05	0.01
Health	0.05	0.02
credit/employment/women's group	0.04	0.08
Irrigation and ponds	0.03	0.17
Education	0.02	0.14
Other	0.04	0.06

Notes:
(1) Each cell is the number of times an issues was mentionned, divided by the total number of issues mentionned.
(2) The data for men comes from a subsample of 48 villages

Table 6: Effect of Women's Reservation on Organizations in the GP

Outcome	Mean, reserved GP	Mean, unreserved GP	Difference	
			no control	controlling for population
	(1)	(2)	(3)	(4)
A. VILLAGE LEVEL				
Women organisations, self help groups	0.05	0.03	0.01	
created since 1998	(.02)	(.01)	(.02)	
Number of tubewells management	0.04	0.03	0.01	
comittees created since 1998	(.02)	(.01)	(.02)	
Village education and Village attendance	1.10	1.04	0.06	
committees created since 1998	(.07)	(.05)	(.09)	
Number of health information campaigns	2.69	2.81	-0.11	
and immunization campaigns since 1998	(.27)	(.19)	(.33)	
All the previous 5 planned Gram Samsad	0.64	0.70	-0.06	
were held.	(.05)	(.04)	(.06)	
B. GP LEVEL				
Women organisations, self help groups	0.26	0.34	-0.08	
and micro-credit groups created since 1998	(.06)	(.05)	(.08)	
Does the GP has a forest management	0.72	0.79	-0.06	
committee or a drinking water committee	(.06)	(.04)	(.07)	
Additional acreage brought under	0.93	0.60	0.33	
social forestries or fisheries since 1998	(.53)	(.21)	(.48)	
Village education and Village attendance	10.17	10.57	-0.40	
committees created since 1998	(.83)	(.74)	(1.19)	
Number of health information campaigns	5.43	6.48	-1.05	
and immunization campaigns since 1998	(1.01)	(.80)	(1.34)	
Total Own fund collected in 1998	40.63	59.11	-18.48	-17.79
(rs. 1000)	(6.28)	(6.06)	(9.58)	(9.79)
Taxes	25.83	34.34	-8.51	-7.63
	(2.84)	(3.26)	(5.01)	(5.12)
Other revenues	9.92	26.53	-16.61	-16.36
	(2.28)	(4.54)	(6.59)	(6.76)

Notes:
(1) Standard errors in parentheses
(2) There are 322 observations in the village level regressions, and 161 in the GP level regressions. There are only 100 observations in the last three rows
(3) Standard errors are corrected for clustering at the GP level in the village level regressions, using Moulton (1986) formula

Table 7: Effect of Women's Reservation on Public Goods Investments

Dependent variable	Mean, reserved GP	Mean, unreserved GP	Difference
(1)	(1)	(2)	(3)
A. VILLAGE LEVEL			
Number of drinking water facilities	23.83	14.74	9.09
newly built or repaired	(5.00)	(1.44)	(4.02)
Number of irrigation facilities	3.31	3.67	-0.36
newly built or repaired	(.81)	(.81)	(1.27)
Condition of roads (1 if in good	0.41	0.23	0.18
condition)	(.05)	(.03)	(.06)
Number of latrines and drainage pits	0.14	0.42	-0.28
newly built or repaired	(.08)	(.13)	(.19)
Number of new biogas facilities	0.26	0.06	0.20
	(.11)	(.02)	(.08)
Number of informal education centers	0.06	0.12	-0.06
	(.02)	(.03)	(.04)
Nuber of of adult education centers	0.10	0.01	0.09
newly built or repaired	(.04)	(.01)	(.03)
Number of formal school buildings	0.59	0.51	0.07
newly built or repaired	(.10)	(.05)	(.10)
B. GP LEVEL			
1 if a new tubewell was built	1.00	0.93	0.07
		(.02)	(.03)
1 if at least one irrigation pump was built	0.17	0.09	0.07
	(.05)	(.03)	(.05)
1 if a metal road was built or repaired	0.67	0.48	0.19
	(.06)	(.05)	(.08)
1 if a culvert or a minor	1.00	0.85	0.15
irrigation canal was built or repaired	(.)	(.03)	(.05)
1 if new toilets or new drainage	0.50	0.57	-0.07
pits were constructed	(.07)	(.05)	(.08)
1 if new biogas equipment was introduced	0.50	0.45	0.05
	(.07)	(.05)	(.08)
1 if there is an informal education	0.67	0.82	-0.16
center in the GP	(.06)	(.04)	(.07)
1 if there is an informal education	0.74	0.83	-0.08
center in the GP (literate pradhans)	(.07)	(.04)	(.07)
1 if there is a continuing education center	0.91	0.87	0.04
or if there was a literacy campaign	(.04)	(.03)	(.05)

Notes:
(1) Standard errors in parentheses
(2) There are 322 observations in the village level regressions, and 161 in the GP level regressions. There are only 100 observations in the last row
(3) Standard errors are corrected for clustering at the GP level in the village level regressions, using Moulton (1986) formula

Table 8: Effect of Women's Reservation on Formal Education and Health Outcomes

	Mean, reserved GP	Mean, unreserved GP	Difference	Number of obs.
	(1)	(2)	(3)	(5)
Number of pre-school centers opened since 1998 (GP)	0.18 (.05)	0.54 (.37)	-0.36 (.52)	160
Number of pre-school centers opened since 1998 (Village level)	0.18 (.43)	0.54 (.3)	-0.36 (.46)	252
Pradhan reports that the Village education Committee has influence over the primary school (GP)	0.80 (.06)	0.89 (.03)	-0.09 (.06)	161
Villagers report that the Panchayat has influence over the running of the primary school (Village)	0.37 (.05)	0.32 (.04)	0.05 (.07)	322
Pradhan reports that low teacher attendance is a problem. (GP)	0.44 (.07)	0.65 (.05)	-0.21 (.08)	161
Pradhan reports that low teacher attendance is a problem. (GP, litterate pradhans only)	0.47 (.08)	0.66 (.05)	-0.19 (.09)	148
Villagers report that low teacher attendance is a problem (village)	0.31 (.05)	0.34 (.04)	-0.03 (.06)	322
Number of health workers or doctor visits in the villages in the last 6 months	12.11 (1.44)	9.00 (.95)	3.11 (1.67)	322
Number of health workers or doctor visits in the villages in the last 6 months (for village with at least 1 visit).	15.03 (1.55)	11.01 (1.09)	4.02 (1.63)	262

Notes:
(1) Standard errors in parentheses
(2) Standard errors are corrected for clustering at the GP level in the village level regressions, using Moulton (1986) formula
(3) All equations are estimated jointly in the GP level regressions and the standard errors account for interequation correlation.

Table 9: Effect of Women's Reservation on the Location of Public Goods

Dependent variable	All GP		GP where woman is helped	
	Pradhan's village	reserved for woman *pradhan's village	Pradhan's village	reserved for woman *pradhan's village
	(1)	(2)	(3)	(4)
Drinking water	38.9	-33	37	-51
	(12)	(16)	(11)	(22)
Irrigation	0.52	3.05	0.27	-2.71
	(1.5)	(2.4)	(1.6)	(2.2)
Road	0.19	-0.13	0.19	-0.1
	(0.058)	(0.098)	(0.058)	(0.150)
Sanitation	1.69	-1.56	1.67	-1.23
	(0.88)	(0.94)	(0.86)	(1.04)
Biogas	0.42	-0.081	0.45	-0.11
	(0.15)	(0.28)	(0.15)	(0.40)
Informal education	0.029	0.02	0.012	-0.0076
	(0.085)	(0.061)	(0.062)	(0.120)
Adult education	0.31	-0.23	0.32	-0.26
	(0.080)	(0.110)	(0.081)	(0.110)
Formal education	0.47	-0.5	0.47	-0.66
	(0.12)	(0.18)	(0.12)	(0.22)
All invesments cumulated	42.6	-32.2	40	-55.9
	(12)	(17)	(11)	(23)
All invesments cumulated, GP reserved for SC/ST	21.7	-21.8	22.2	-33
	(6.7)	(11.4)	(6.7)	(18.8)
Number of observations	477		384	

Notes:
(1) each row gives the result from a separate regression of the dependent variable on gp population, a dummy for woman reservation, a dummy for pradhan's village and the interaction between pradhan's village and woman reservation dummies. Only the last two coefficients are reported.
(2) standard errors in parentheses
(3) Standard errors are corrected for clustering at the GP level
(4) Variables in this table are defined as in table 8
(5) There are 218 observations for the last line, column (1) and (2), and 170 for the last line, column (3) and (4)

Table 10: Effect of Women's Reservation in Selected Sub-Samples

	Difference between GP reserved for women and unreserved GP			
	All GP	Previous pradhan's constituency reserved	GP will be reserved in 2003	GP is reserved for SC/ST
	(1)	(2)	(3)	(4)
PANEL A: PRADHAN'S BACKGROUND AND EXPERIENCE				
Pradhan's education	-2.79	-2.58	-3.31	-2.65
	(.54)	(.68)	(.61)	(.86)
Number of assets	-0.64	-0.70	-0.60	-0.37
	(.23)	(.26)	(.26)	(.27)
Population of Pradhan's village	-554	-482	-357	14
	(291)	(312)	(349)	(381)
Elected in GP council	-0.32	-0.24	-0.31	-0.14
before 1998	(.07)	(.08)	(.08)	(.09)
Elected as Pradhan before 1998	-0.12	0.00	-0.08	-0.02
	(.04)	(.)	(.04)	(.03)
Will not run again	0.13	0.14	0.13	0.16
	(.07)	(.09)	(.09)	(.1)
PANEL B: WOMEN'S PARTICIPATION				
Have women addressed a complaint to	0.09	0.10	0.11	0.10
the GP in the last 6 months	(.05)	(.06)	(.06)	(.06)
PANEL C: PUBLIC GOODS				
Revenue collection in the GP	-18	-14	-7	-11
(controlling for GP population)	(10)	(11)	(10)	(14)
Village level:				
Number of drinking water facilities	9.09	8.44	10.14	10.59
newly built or repaired	(4.02)	(5.5)	(5.25)	(6.01)
Condition of roads (1 if in good	0.18	0.21	0.21	0.25
condition)	(.06)	(.07)	(.06)	(.08)
Number of new biogas facilities	0.20	0.17	0.21	0.22
	(.08)	(.12)	(.12)	(.15)
Nuber of of adult education centers	0.09	0.09	0.08	0.09
newly built or repaired	(.03)	(.04)	(.04)	(.04)
GP level:				
1 if a new tubewell was built in the GP	0.07	0.08	0.06	0.09
	(.03)	(.04)	(.03)	(.05)
1 if a metal road was built or repaired in the GP	0.19	0.11	0.17	0.22
	(.08)	(.09)	(.1)	(.12)
1 if there is an informal education	-0.16	-0.14	-0.13	-0.14
center in the GP	(.07)	(.09)	(.09)	(.11)
PANEL C: MONITORING				
Pradhan reports that low teacher attendance is a	-0.21	-0.19	-0.22	-0.24
problem. (GP)	(.08)	(.1)	(.1)	(.11)
Number of health workers or doctor visits	3.11	2.34	3.40	0.87
in the last 6 months (for village with at least 1 visit).	(1.67)	(2.14)	(1.82)	(2.48)

Note

(1) Column 2 presents the difference between the mean of the dependent variable in GPs reserved for women and GP where the previous Pradhan was prevented from re-election due to a reservation of his boot
There are 55 GP (110 villages) reserved for women, and 51 GP (102 villages) where the previous pradhan's boot is reserved

(2) Column 3 presents the difference between the mean of the dependent variable in GP reserved for women and GP that will be reserved for woman in 2003
There are 55 GP (110 villages) reserved for women in 1998, and 52 GP (146 villages) that will be reserved in 2003

(3) Colum 4 presents the difference between the mean of the dependent variable in GP reserved for a woman SC/ST and GP reserved for a SC/ST
There are 78 GP (146 villages) reserved for SC and ST, including 28 reserved for women as well

(4) Standard errors are in parentheses, and are corrected for correlation at the GP level in the village level regressions

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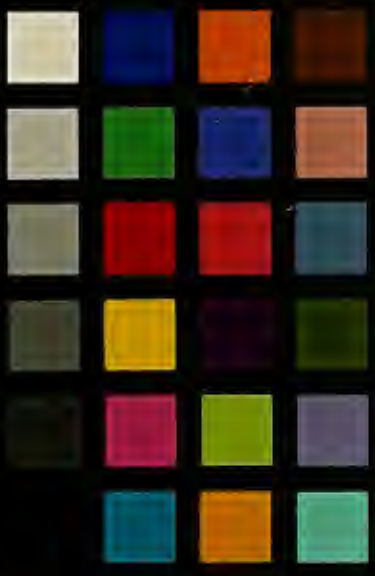
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